

IEEE Miami Section Invited Seminar Announcement

“Broken-Symmetry Nanophotonics Heralds New Era of Light Technologies”

Speaker: Aleksandr Krasnok

Date: June 17, 2021

Lecture: 3:00 PM-4:00 PM, FIU-EC 3930

ZoomLink: <https://fiu.zoom.us/j/94611211726?pwd=bnpuRkRMbIBVTWZiMnMrMG5OaklJZz09>

Abstract:

When light is squeezed down to subwavelength dimensions, the local symmetries of nanophotonic structures come to the fore and play a decisive role. Anisotropy enables new interesting regimes of operation and novel functionality, including hyperbolic modes and topological transitions, novel physics of moiré patterns, spin-orbit locking, enhanced valley polarization and chirality. The rotation and translation symmetries of optical structures enable nonradiative and nonscattering modes with unboundedly large radiative Q-factor, which can be controlled by symmetry breaking. The lack of time-reversal symmetry enables nonreciprocity and isolating devices in classical and quantum realms. In this talk, I will discuss how nanophotonics with broken symmetries heralds a new era of light and quantum technologies.



Speaker's Bio

Aleksandr (Alex) Krasnok is a research assistant professor and founding core facility director at CUNY Advanced Science Research Center since 2018. Before this, he was a research scientist at the University of Texas at Austin and a research team leader at ITMO University. He earned a Ph.D. in photonics from ITMO University in 2013. His research interests span the fields of photonics, quantum optics, and metamaterials, with a particular focus on interdisciplinarity and innovations. He has authored and co-authored more than 140 papers, six book chapters, and four patents. He has earned several research awards and grants, including the gold medal of Nobel Laureate Zhores Alferov's Foundation. Several years in a row, his works have been selected for OPN's Year in Optics as among the most noticeable results in applied electromagnetics. As much of his research is applied, it has led to collaborations with industry partners.

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